

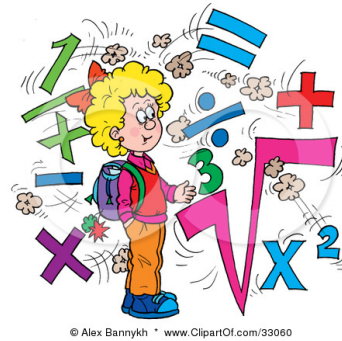
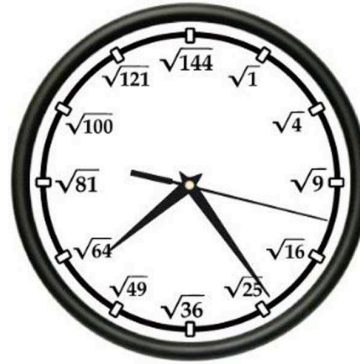
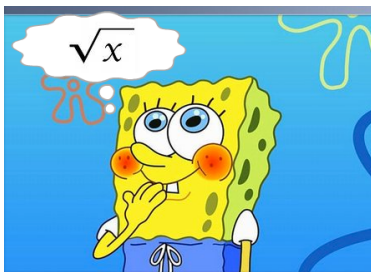
Chapter 6 Square Roots & the Pythagorean Theorem

6.4 Simplifying Square Roots

Unit Question: How do we use signs and symbols to help us?

Learner Profile: Inquirer

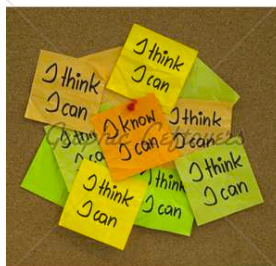
Area of Interaction: Human Ingenuity



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I Can Statement:

I can simplify square roots.



Adding Square Roots

Simplify

$$5\sqrt{2} + 4\sqrt{2}$$

$$= (5+4)\sqrt{2} \quad \text{Use the Distributive Property}$$

$$= 9\sqrt{2} \quad \text{Simplify}$$

Subtracting Square Roots

$$2\sqrt{3} - 7\sqrt{3}$$

$$= (2-7)\sqrt{3} \quad \text{Use the Distributive Property}$$

$$= -5\sqrt{3} \quad \text{Simplify}$$

On Your Own

Simplify the expression.

1. $\sqrt{5} + \sqrt{5}$

$2\sqrt{5}$

2. $6\sqrt{10} + 4\sqrt{10}$

$(6+4)\sqrt{10}$

$10\sqrt{10}$

3. $2\sqrt{7} - \sqrt{7}$

$(2-1)\sqrt{7}$

$1\sqrt{7}$

AKA

$\sqrt{7}$



Key Idea

Product Property of Square Roots

Algebra $\sqrt{xy} = \sqrt{x} * \sqrt{y}$

Numbers $\sqrt{4 * 3} = \sqrt{4} * \sqrt{3}$

$\sqrt{12}$

Simplifying Square Roots

$$\sqrt{50}$$

Factor using the
greatest perfect square

$$\sqrt{50} = \sqrt{25 * 2}$$

$$= \sqrt{25} * \sqrt{2}$$

Use the Property of
Square Roots

$$= 5\sqrt{2}$$

Simplify

● On Your Own

Simplify the expression.

4. $\sqrt{24}$

$$\begin{aligned} &\sqrt{4 \times 6} \\ &2 \times \sqrt{6} \\ &2\sqrt{6} \end{aligned}$$

5. $\sqrt{45}$

$$\begin{aligned} &\sqrt{9 \times 5} \\ &\sqrt{9} \times \sqrt{5} \\ &3\sqrt{5} \end{aligned}$$

6. $\sqrt{98}$

$$\begin{aligned} &\sqrt{49 \times 2} \\ &\sqrt{49} \cdot \sqrt{2} \\ &7\sqrt{2} \end{aligned}$$

Quotient Property of Square Roots

$$\sqrt{\frac{x}{y}} = \frac{\sqrt{x}}{\sqrt{y}}, \text{ where } x \geq 0 \text{ and } y > 0$$

Simplifying Square Roots

$$\sqrt{\frac{11}{16}}$$

$$\sqrt{\frac{11}{16}} = \frac{\sqrt{11}}{\sqrt{16}}$$

Use the Quotient Property of Square Roots

$$= \frac{\sqrt{11}}{4}$$

Simplify

● On Your Own

Simplify the expression.

7. $\sqrt{\frac{35}{36}}$

$$\frac{\sqrt{35}}{\sqrt{36}} = \frac{\sqrt{35}}{6}$$

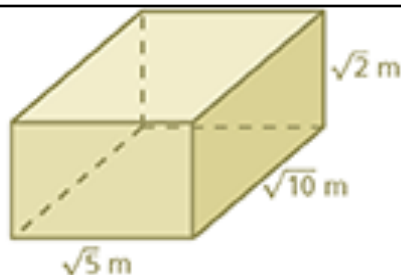
8. $\sqrt{\frac{13}{4}}$

$$\frac{\sqrt{13}}{\sqrt{4}} = \frac{\sqrt{13}}{2}$$

9. $\sqrt{\frac{5}{b^2}}$

$$\frac{\sqrt{5}}{\sqrt{b^2}} = \frac{\sqrt{5}}{b}$$

Find the volume of the rectangular prism.



$$\begin{aligned} V &= Bh \\ &= (\sqrt{5})(\sqrt{10})(\sqrt{2}) \\ &= \sqrt{5 \cdot 10 \cdot 2} \\ &= \sqrt{100} \\ &= 10 \end{aligned}$$

Write formula for volume.

Substitute.

Use the Product Property of Square Roots.

Multiply.

Simplify.

❖ The volume is 10 cubic meters.



Assignment:

Textbook p256-257

6-28even, 29-31

Revisit 6.5